Pre Calculus Honors **Name:**

Classwork **Date:**

1.10 part II

Function Composition

1. Given $f(x) = 3x+4$, $g(x) = x^2 + 1$, and $h(x) = \dfrac{2}{x-5}$ find:

a. $f(g(0)) =$

b. $g(f(0)) =$

c. $f(g(2)) =$

d. $g(f(1)) =$

e. $f(g(x)) =$

f. $g(f(x)) =$

g. $h(f(x)) =$

h. $f(h(x)) =$

2. Given that $h(x) = f(g(x))$, fill out the table of values for $h(x)$.

x	$f(x)$
1	2
2	3
3	1
4	4

x	$g(x)$
1	2
2	4
3	3
4	1

x	$h(x)$
1	
2	
3	
4	

3. Given that $h(x) = f(g(x))$, fill in the missing values

x	$f(x)$
1	3
2	5
3	
4	
5	1

x	$g(x)$
1	
2	
3	4
4	2
5	

x	$h(x)$
1	4
2	3
3	2
4	5
5	1

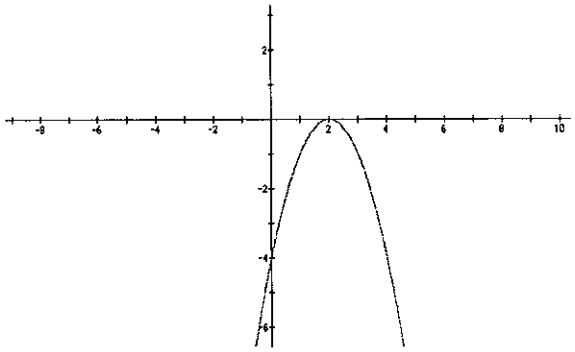
4. Use the graphs below to evaluate:

a) $f(g(6)) =$ _____

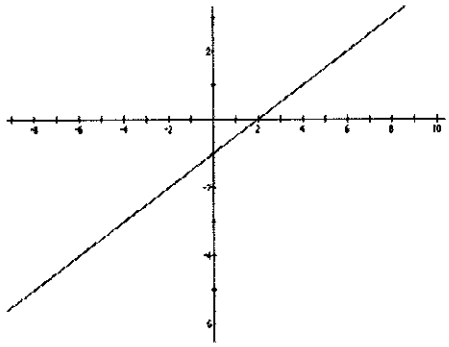
b) $g(f(2)) =$ _____

c) $g(f(0)) =$ _____

Graph of f

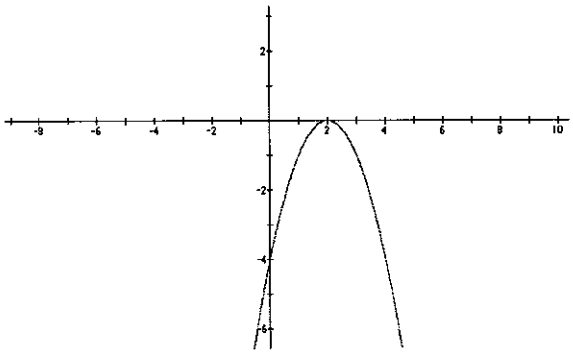


Graph of g



5. Use the Graph of f and the table for g to evaluate the following:

Graph of f



x	$g(x)$
0	3
2	0
3	4
4	2

a) $f(g(4)) =$ _____

b) $g(f(2)) =$ _____

c) $f(g(2)) =$ _____

6. Let $f(x) = x^2 + 1$ and $g(x) = 2x + 3$.

a. $f(7) =$ _____ **b.** $g(3) =$ _____ **c.** $f(g(3)) =$ _____

d. $f(g(x)) =$ _____ **e.** $g(f(x)) =$ _____

7. Use the words *input* and *output,* as appropriate, to fill in the missing blanks:

The function $f(g(t))$ uses the _____ of the function g as the _____ to the function f. The function $g(f(t))$ uses the _____ of the function f as the _____ to the function g.

8. Let $u(x) = p(q(x))$ and $v(x) = q(p(x))$ where $p(x) = 3x - 4$ and $q(x) = x^2 + 5$.

a. Calculate $u(4)$ and $v(4)$. Are they the same?

$u(4) =$ _____ $v(4) =$ _____

b. Find formulas for $u(x)$ and $v(x)$ in terms of x. What can you conclude about the order of functions in doing a composition?

$u(x) =$ _____

$v(x) =$ _____

9. Let $f(x) = x^2 + 3$ and $g(x) = 2x + 1$.

a. $f(7) =$

b. $g(3) =$

c. $f(g(3)) =$

d. $f(f(3)) =$

e. $f(g(x)) =$

f. $g(f(x)) =$

g. $g(g(x)) =$